

M&C Folio No MRB.P53007WO

**WHAT IS CLAIMED IS:**

1. A method of at least partially securing communications, via a Host Identity Protocol, HIP, proxy, between a first host which is not HIP enabled and a second host which is HIP enabled, the method comprising:
  - sending a query from the first host to resolve the Internet Protocol, IP, address of the second host;
  - in response to said query, retrieving an IP address and Host Identity Tag, HIT, associated with the second host, returning from the proxy a substitute IP address associated with the second host, and maintaining at the proxy a mapping between the substitute IP address, the retrieved IP address and the retrieved HIT; and
  - upon receipt of a session initiation message at the proxy from the first host including as its destination address the substitute IP address, using the mapping to negotiate a secure HIP connection between the proxy and the second host.
2. A method as claimed in claim 1, comprising looking up the retrieved IP address and the retrieved HIT from the mapping based on the substitute IP address in the session initiation message, and performing the HIP negotiation using the retrieved IP address and the retrieved HIT to locate and identify the Responder together with an IP address and HIT of the proxy to locate and identify the Initiator.
3. A method as claimed in claim 1 or 2, wherein the retrieved IP address is the IP address of a Forwarding Agent used by the second host, and further comprising initiating the HIP negotiation between the proxy and the second host by sending the initial HIP negotiation packet to the Forwarding Agent.
4. A method as claimed in claim 3, further comprising, following receipt of the actual IP address of the second host at the proxy during the HIP negotiation, including the actual IP address in the mapping maintained at the proxy.
5. A method as claimed in claim 4, wherein the retrieved IP address is replaced in the mapping by the actual IP address following its receipt at the proxy.

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6. A method as claimed in claim 1 or 2, wherein the retrieved IP address is the actual IP address of the second host.
7. A method as claimed in any preceding claim, further comprising, for an outgoing message received at the proxy after the secure HIP connection has been established including as its destination address the substitute IP address, using the mapping to route the message over the secure HIP connection to the second host.
8. A method as claimed in claim 7, when dependent on claim 4, comprising looking up the actual IP address and the retrieved HIT from the mapping based on the substitute IP address in the outgoing message, and routing the outgoing message to the second host using the actual IP address and the retrieved HIT to locate and identify the destination of the message, and using an IP address and HIT of the proxy to locate and identify the source of the message.
9. A method as claimed in any preceding claim, further comprising completing the establishment of communications between the first and second hosts by forwarding the session initiation message from the proxy to the second host over the secure HIP connection, replying with a session acknowledgment message from the second host to the proxy over the secure HIP connection, and routing the session acknowledgment message to the first host.
10. A method as claimed in claim 9, wherein the session acknowledgment message is a TCP ACK message.
11. A method as claimed in any preceding claim, wherein the session initiation message is a TCP SYN message.
12. A method as claimed in any preceding claim, further comprising, for an incoming message received at the proxy from the second host over the established secure HIP connection, using a NAT function of the proxy to route the message to the appropriate destination host.

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13. A method as claimed in any preceding claim, wherein the query is a DNS query.

14. A method as claimed in any preceding claim, wherein the proxy performs the step of retrieving the IP address and HIT associated with the second host.

15. A method as claimed in claim 14, wherein the proxy retrieves the IP address and HIT associated with the second host from an external DNS server.

16. A method as claimed in claim 14, wherein the proxy retrieves the IP address and HIT associated with the second host from an internal DNS server.

17. A method as claimed in any preceding claim, wherein the proxy intercepts the DNS query from the first host.

18. A communications system comprising a first host which is not Host Identity Protocol, HIP, enabled, a second host which is HIP enabled, and a HIP proxy, wherein:

the first host comprises means for sending a query to resolve the Internet

Protocol, IP, address of the second host;

the proxy comprises means for retrieving, in response to said query, an IP address and Host Identity Tag, HIT, associated with the second host, for returning a substitute IP address associated with the second host, for maintaining a mapping between the substitute IP address, the retrieved IP address and the retrieved HIT, and for using the mapping, upon receipt of a session initiation message from the first host including as its destination address the substitute IP address, to negotiate a secure HIP connection between the proxy and the second host.

19. A method for use by a Host Identity Protocol, HIP, proxy of at least partially securing communications, via the proxy, between a first host which is not HIP enabled and a second host which is HIP enabled, the method comprising:

receiving a query from the first host to resolve the Internet Protocol, IP, address of the second host;

in response to said query, retrieving an IP address and Host Identity Tag, HIT, associated with the second host, returning a substitute IP address associated with the

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second host, and maintaining a mapping between the substitute IP address, the retrieved IP address and the retrieved HIT; and

upon receipt of a session initiation message from the first host including as its destination address the substitute IP address, using the mapping to negotiate a secure HIP connection between the proxy and the second host.

20. A Host Identity Protocol, HIP, proxy for use in at least partially securing communications, via the proxy, between a first host which is not HIP enabled and a second host which is HIP enabled, comprising:

means for receiving a query from the first host to resolve the Internet Protocol, IP, address of the second host;

means for retrieving, in response to said query, an IP address and Host Identity Tag, HIT, associated with the second host, returning a substitute IP address associated with the second host, and maintaining a mapping between the substitute IP address, the retrieved IP address and the retrieved HIT; and

means for using the mapping, upon receipt of a session initiation message from the first host including as its destination address the substitute IP address, to negotiate a secure HIP connection between the proxy and the second host.

21. An operating program which, when run on a HIP proxy, causes the proxy to carry out a method as claimed in claim 19.

22. An operating program which, when loaded into a HIP proxy, causes the proxy to become one as claimed in claim 20.

23. An operating program as claimed in claim 21 or 22, carried on a carrier medium.

24. An operating program as claimed in claim 23, wherein the carrier medium is a transmission medium.

25. An operating program as claimed in claim 23, wherein the carrier medium is a storage medium.